

REMARKS

Claim Amendments

Claims 36, 51, 73 and 80 are amended to define the “exit opening,” support for which can be found in the specification as filed at least in the figures and at paragraph [0032]. No new matter is added.

Section 102/103 Rejections

The Examiner has maintained the rejection of independent claims 36 and 51 (and certain dependent claims therefrom) under **35 U.S.C. § 102(b)** as being anticipated by *Yoshida* (US 6,220,847), and claims 73 and 80 (and certain dependent claims therefrom) as anticipated by *Ready* (US 6,474,969). Applicants traverse these rejections, as *Yoshida* or *Ready* does not disclose a heating element at the exit opening as claimed.

As pointed out in *In re Japikse*¹ and *In re Gazda*² cited by the Examiner, care must be taken to specify the exact location of each element of the prior art in reaching any conclusions.³ In taking care to do this in each case—by looking at the exact location of prior art heating elements relative to the die openings—the Applicants find that there is no disclosure of heating elements at a die opening, nor is there “abundant suggestion”⁴ in the prior art of relocating a heating element to a die exit opening.

Yoshida discloses a die having nozzles (7) surrounded by “heat transfer channels (8), as reproduced below in a close-up of Figure 2. There are three thermocouples: a first

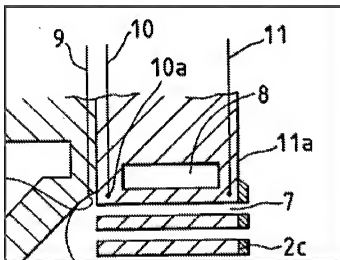
¹ 86 USPQ 70 (Bd. Pat. App. & Interf. 1950).

² 104 USPQ 400 (Bd. Pat. App. & Interf. 1955).

³ *Japikse* “In the present case, the examiner has not established that the same could be said for changing the relative locations of Law’s throttle and shut-off valves. In conclusion, based on the foregoing, we are constrained to reverse the examiner’s rejection.”

⁴ “We have carefully considered the reasons prompting appellant’s argument in support of the view expressed, and while no single prior art reference of record shows all of appellant’s structural elements in the relationship as claimed, we think the board clearly and correctly demonstrated in its opinion that there is abundant suggestion in the prior art for modification of the structures of the references to arrive at appellant’s device.” *In re Gazda*.

thermocouple (9), a second thermocouple (10) and a third thermocouple (11).⁵ These thermocouples are used to represent transition points in the temperature profile of the resin passing through nozzles (7) as represented in Figure 3, wherein, the third thermocouple (11) represents point “X3”.⁶ One can clearly see from Figure 3 that from the point of the third thermocouple and downstream thereof that the resin temperature drops dramatically. This is contrary to and teaches away from the Applicants’ claimed invention, wherein the purpose of Applicants’ claimed embodiments is to keep the resin temperature at this section of the die high or even higher than the upstream portion of the resin. *Yoshida* clearly does not anticipate Applicants’ claimed embodiments.



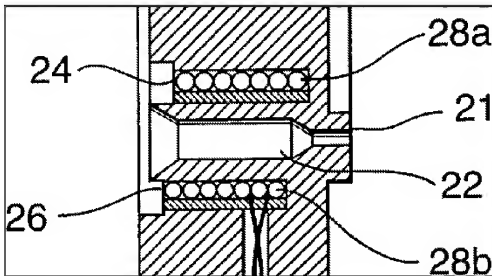
Close-up of Yoshida's Figure 2

Ready discloses a die having electrical heating elements 28a and 28b as shown in the close-up reproduction of Figure 3 below. The heating elements surround the orifice 22 along its mid-section. On the drawings and description of *Ready*, it is apparent that the heating elements are not “at the exit opening” as claimed in Applicants’ embodiments. As can be seen in the figure below, the orifice 22 (in moving from left to right along the figure) narrows down to a

⁵ *Yoshida* at column 4, lines 55-57 (third thermocouple).

⁶ *Yoshida* at column 5, lines 30-48.

smaller diameter channel before forming an exit on the surface of the die. Certainly at that point (corresponding to a die exit opening) there is no heating element. The Examiner, in his rejection, simply has not pointed out where in the disclosure of *Ready* each claim element of claims 72 and 73 is found.



Close-up of Ready's Figure 3

The Examiner states that “[Ready] further teaches that the heating element is involved to provide heat to the die opening (22) both on the inside and outside, thereby maintaining uniform amount of heat around the openings (22), which allows the molten materials passing through each of the opening (22) to remain in molten condition unit [sic] it has exited from the opening (see col.4 lines 4-10).”⁷ In fact, *Ready* states at the section referenced by the Examiner that “This allows polymer material passing through each orifice 22 to remain molten until it has exited the orifice.”⁸ However, this does not teach “locally heating” of the resin as is claimed, nor does it teach heating to an increased temperature as claimed. The same function is not described in *Ready*. In fact, in looking at the prior art in *Yoshida*, it seems clear that, unless there is an

⁷ Office Action at page 7.

⁸ *Ready* at column 4, lines 9-10.

explicit teaching of a heating means at the die exits, and a desire to heat the resin as such, that the resin temperature will decline. Thus, it cannot be said that the prior art “discloses [the] claimed structural limitations with desired function” under *In re Japikse*, 86 USPQ 70 (1950); *In re Gazda*, 104 USPQ 400 (1955). The Examiner’s reliance on *Japikse* and *Gazda* is in fact contrary to a finding of anticipation or obviousness in the present case.

With respect to *In re Japikse*, the Board stated:

We think it is quite clear that *Japikse* is limited to the facts of the case, i.e., the position of the starting switch is immaterial and, therefore, obvious, since the overall operation of the device would not be affected by such change. In the present case, the examiner has not established that the same could be said for changing the relative locations of Law's throttle and shut-off valves. In conclusion, based on the foregoing, we are constrained to reverse the examiner's rejection.⁹

Such is the case here. The Examiner has not established that changing the location of the heating elements of *Ready* is suggested or would achieve the result desired by the Applicants. The Examiner merely points to features in the prior art and states that the features could be rearranged, but does not find the suggestion in the prior art to in fact perform such a rearrangement.

Further, the Board in *Gazda* stated:

We have carefully considered the reasons prompting appellant's argument in support of the view expressed, and while no single prior art reference of record shows all of appellant's structural elements in the relationship as claimed, we think the board clearly and correctly demonstrated in its opinion that there is abundant suggestion in the prior art for modification of the structures of the references to arrive at appellant's device.¹⁰

Unlike in *Garza*, the Examiner has not “clearly and correctly demonstrated . . . that there is

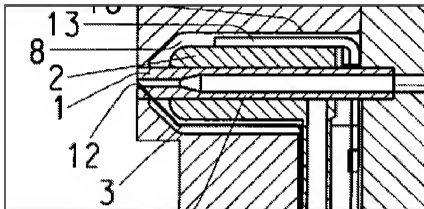
⁹ *Ex parte Robles*, page 2, 1997 WL 1883840 (Bd. Pat. App. & Interf. 1997). (emphasis added)

¹⁰ *In re Garza*, page 1. (emphasis added)

abundant suggestion in the prior art for modification of the structures” to arrive at the Applicants’ invention. For *Gazda* to support the Examiner’s contention, there needs to be some suggestion in *Ready* to move a heating element towards the exit opening (not labeled in the figures of *Ready*, but an equivalent as such is essentially to the right of “22” in the figures) and to locally heat the resin at that point to keep its temperature higher than that of the resin downstream therefrom. There is no such suggestion in *Ready*.

The Examiner has maintained the rejection of independent claims 36, 51, 72, 73 and 80 (and certain dependent claims therefrom) under 35 U.S.C. § 103(a) as obvious over *Leffew et al.* (US 6,409,491). Applicants traverse these rejections, as *Leffew* does not disclose a heating element at the exit opening as claimed.

Leffew discloses a heater 2, as reproduced below from Figure 1 of *Leffew*. In this close-up of the drawing, it is apparent that the heater 2 is not at the die opening (“outlet 12”) as in Applicants’ claimed embodiments. In fact, there is a thermocouple 3 located at the outlet 12 that would prevent the placement of the heater 2 at the die opening. Further, the presence of the “air gap 8” would make the placement of a heater at the die opening impossible,¹¹ and render the die of *Leffew* unfit for its intended purpose.



Close-up of Leffew’s Figure 1

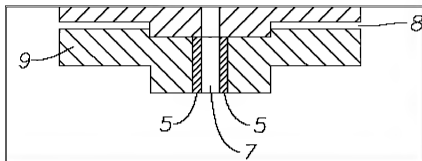
¹¹ As explained in *Leffew* at column 3, lines 34-42, the air gap 8 is used to pass cooling air to cool the passageway.

Of *Leffew*, the Examiner states that it “discloses extrusion die assembly (14) having a polymer passage (15); extrusion barrel with inlet (11) and outlet (12); and a heater (2), wherein heater press fit on the outside of the barrel with thermocouple for sensing the polymer temperature at the extrusion barrel outlet (12) (see col. 2 lines 60-67; figure 1), thus it teaches that the heater is disposed at or near the die opening for heating the polymer at the exit.”¹² The Examiner arbitrarily reaches the later conclusion by citing various elements of *Leffew*’s die, but does not really point out how these elements describe a heater “at the exit opening.” As pointed out above, *Japikse* and *Gazda* do not remedy this, as there is no “abundant suggestion” in *Leffew* to relocate elements to fit the Applicants’ claimed embodiments. *Leffew* discloses that “each extrusion barrel has a heater,” not that the opening has a heater; and *Leffew* does not suggest moving the heater to the opening. Applicants’ invention is not disclosed or suggested and a *prima facie* case of obviousness is not made here.

The Examiner has maintained the rejection of dependent claims 41, 42, 49-50, 54, 55, 63, 64, 78, 85 and 87-90 under **35 U.S.C. § 103(a)** as obvious over *Leffew et al.* (US 6,409,491) in view of *Dudley*. Further, the Examiner has maintained the rejection of dependent claims 41, 42, 49-50, 54, 55, 63, 64, 87 and 88 under **35 U.S.C. § 103(a)** as obvious over *Yoshida* in view of *Dudley*. Finally, the Examiner has maintained the rejection of dependent claims 89 and 90 under **35 U.S.C. § 103(a)** as obvious over *Ready* in view of *Dudley*. Applicant traverses these rejections, as none of *Yoshida*, *Ready*, *Leffew* or *Dudley* disclose a heating element at the exit opening as claimed in the independent claims that these claims depend therefrom. Thus, these claims are allowable.

Claimed embodiments of Applicants’ invention involve a heater “at the die exit opening.” An embodiment of the claimed features is shown in Figure 2 (reproduced in part below):

¹² Office Action at page 3.



Close-up of Applicants' Figure 2

wherein the heating element 5 is at the distal portion of the die at the opening 7. The Examiner has not shown this arrangement of elements (heater means, die opening) in the prior art, nor a suggestion of changing the prior art to arrive at this arrangement of elements. Given this interpretation and amendment to the claims, consistent with the written description, the Applicants contend that none of the art cited by the Examiner discloses the features of the independent claims 36, 51, 72, 73 and 80.

Thus, the Applicants request that these rejections be withdrawn.

Having demonstrated that the cited references fail to disclose or suggest the invention as claimed, and all other formal issues having now been fully addressed, this application is believed to be in condition for allowance. If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response. Please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1712 (Docket #: 2003B103/2).

Respectfully submitted,

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